

Robert A. Salter, SCS, Washington, D. C.

January 25, 1952

E. J. Gore, SCS, San Fernando, California

Special Storm Report, Los Angeles River Watershed Flood Control Project

The accompanying report has been prepared in accordance with Dr. Bennett's memorandum dated March 15, 1951, and your request of January 21 to Mr. Christ.

The floods of January 15 to 18 caused widespread damage in San Fernando Valley. Works of improvement installed under the flood control program performed exceptionally well. Protected watershed areas experienced negligible damage.

Estimates of damage prevention benefits and flood damage, in this report, are based on consideration of more specific information than was available for my telegram of January 23.

Plans for improvements in the damaged areas have been prepared for several years. Observation of the performance of similar types of installed measures indicates that much of the reported damage would have been prevented by the proposed improvements. The rate of progress on installation of improvements under the flood control authorization has been limited by availability of flood control funds to match available local funds.

We will be pleased to provide additional information desired as it becomes available.

Attachment

cc: J. H. Christ
J. S. Barnes

EJC:EEF

January 25, 1952

Robert A. Walter, 808, Washington, D. C.

E. J. Gore, 808, San Fernando, California

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cc: J. H. Christ
J. S. Barnes

ENCLOSURE

SPECIAL STORM REPORT
LOS ANGELES RIVER WATERSHED
JANUARY 15-18, 1952

This report is to present a preliminary evaluation of the performance and benefits of works of improvement, installed under the flood control authorization, during flood flows in the storm period of January 15-18, 1952. It also contains estimates of flood water and sediment damages in unprotected subwatersheds within the project area, in the San Fernando Valley Soil Conservation District.

Observations and evaluations presented are necessarily preliminary in nature to permit completion of the report by January 25. It is anticipated that more specific study of certain phases of flood and sediment damage, and program performance will be summarized at a later date.

RAINFALL AND FLOOD DISCHARGES

Approximately 2.6 inches of rainfall were recorded in the Valley within a few days prior to the flood period. Rainfall at Van Nuys, within area of most severe runoff and damage, is shown below for the two flood peak periods:-

January 15, 12:30 a.m. to January 16, 1:00 a.m. - 4.0 inches
January 17, 12:00 noon to January 18, 6:00 a.m. - 4.4 inches

This storm caused the first flood runoff of damaging magnitude in San Fernando Valley since 1943. In the western part of the Valley flood discharges were of major storm proportions. Peak flows for subwatershed streams with runoff records are shown below along with estimated or recorded maximum discharges during floods of January 1943 and March 1938.

Stream	Drainage Area Sq.Mi.	Maximum Discharge c.f.s.		
		Mar. 1938	Jan. 1943	Jan.17 1952
Calabasas Creek (near Ventura Blvd.)	2.4	947	445	670
Limekiln Creek (near Devonshire St.)	3.8	712	200	940
Aliso Creek (near Canyon mouth)	7.6	3945	1750	1775

Two periods of high runoff occurred, the first at about 11:30 p.m. on January 15 and the second discharge at about 10:30 p.m. on January 17.

The primary source of runoff was from the foothill and mountain watersheds bordering the Valley.

SPECIAL STORM REPORT
LOS ANGELES RIVER WATERSHED
JANUARY 12-13, 1952

This report is to present a preliminary evaluation of the performance and benefits of works of improvement, installed under the Flood Control Act of 1928, during flood flows in the storm period of January 12-13, 1952. It also contains estimates of flood water and sediment damages in unprotected subwatersheds within the project area, in the San Fernando Valley Soil Conservation District.

Observations and evaluations presented are necessarily preliminary in nature to permit completion of the report by January 25. It is anticipated that more specific study of certain phases of flood and sediment damage, and program performance will be summarized at a later date.

RAINFALL AND FLOOD DISCHARGES

Approximately 2.6 inches of rainfall were recorded in the Valley within a few days prior to the flood period. Rainfall at Van Nuys, within area of most severe runoff and damage, is shown below for the two flood peak periods:-

January 12, 12:30 a.m. to January 13, 1:00 a.m. - 11.0 inches
January 13, 12:00 noon to January 14, 6:00 a.m. - 11.4 inches

This storm caused the first flood runoff of damaging magnitude in San Fernando Valley since 1943. In the western part of the Valley flood discharges were of major storm proportions. Peak flows for subwatersheds streams with runoff records are shown below along with estimated or recorded maximum discharges during floods of January 1943 and March 1938.

Stream	Average Area Sq. Mi.		Maximum Discharge c.f.s.	
	1943	1938	Jan. 1952	Jan. 1952
Calabasas Creek (near Ventura Blvd.)	2.4	917	445	670
Theriot Creek (near Devonshire St.)	3.8	712	200	910
Aliso Creek (near Canyon Mouth)	7.6	3945	1750	1775

Two periods of high runoff occurred, the first at about 11:30 p.m. on January 12 and the second discharge at about 10:30 p.m. on January 13.

The primary source of runoff was from the foothill and mountain watersheds bordering the Valley.

PROGRAM PERFORMANCE BENEFITS AND FLOOD DAMAGES

CROPLAND AND WATERSHED LANDS

Conservation measures on the land gave a good account of themselves. Negligible erosion occurred on protected cropland in contrast with erosion rates up to 100 tons per acre on clean cultivated land. The contrast of erosion conditions is shown in photo (21)*. Most severe erosion occurred on slopes up to 15 per cent seeded to winter grain. Ground cover was very effective. The many seeded pastures prevented soil loss. Contour tilled lands with good volunteer cover showed little soil loss. Terraced orchards gave outstanding performance. Dense cover crop in orchards reduced soil movement. Non-cultivation in citrus orchards with tree litter remaining on the surface gave effective control on lesser slopes. The three following photographs (16)(17)(18) in adjacent orchards, show relative erosion under these and clean cultivated conditions. Plant residue such as tomato vines shown in photo (20) prevented soil loss on gently sloping cropland areas. While soil erosion was negligible considerable runoff occurred from these lands.

Farm waterways, terraces and interception ditches generally functioned satisfactorily. Concentration of runoff from stream and road gutter overflow caused scour of top soil from cropland in limited areas.

Estimates of soil erosion by rill measurement and observation on lands where substantial losses occurred are tabulated below. On the whole, erosion from cropland was moderate.

Land Use	Acres	Average Rate of Soil Loss Tons per acre	Total Loss Tons
Orchard	812	12	9800
Grainland	633	25	16000
Scour of top soil	183	75	13800
TOTAL	1628		29600

Cover conditions in the hills surrounding the valley were generally normal except for specific localized areas in Browns Creek above the canyon mouth, and in adjacent watersheds.

In November 1950, fire burned 1.82 square miles of brush land. Little regrowth of effective vegetation had occurred. Heavy soil losses were general in the burned area. Mild flood flows over the last seven dry years stored up large quantities of debris in the mountain channels. This material, particularly in the denuded Browns Creek watershed was flushed out during the January 1952 storm over the agricultural lands and communities in the valley floor.

* Map location and photo number reference.

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Cover conditions in the hills surrounding the valley were generally normal except for specific localized areas in Brown Creek above the canyon mouth, and in adjacent watersheds.

In November 1950, fire burned 1.82 square miles of brush land. Little regrowth of effective vegetation had occurred. Heavy soil losses were general in the burned area. Mild flood flows over the last seven dry years stored up large quantities of debris in the mountain channels. This material, particularly in the denuded Brown Creek watershed was flushed out during the January 1952 storm over the agricultural lands and communities in the valley floor.

SUBWATERSHED WATERWAYS

BELL-DAYTON, CALABASAS WATERSHEDS

General

These watersheds cover the entire west end of the San Fernando Valley and include the communities of Calabasas and Canoga Park. (see maps) Channel improvements installed under the flood control program have been completed on Bell Creek, South Fork Bell Creek, Dayton Creek, Chatsworth Creek, and the lower 2 miles of Calabasas Creek. Two secondary channels draining into Dayton Creek have not been constructed to date. One of these channels, the North Branch Bell Creek, is scheduled for construction next spring. Completed sections of Bell Creek Channel are shown in photographs (1) and (2).

Channel Operation

All completed channels in this area functioned perfectly and flowed from 60% to over capacity. No significant damage occurred to the channel installations themselves, except for minor scour in the main Bell Creek system and Calabasas Creek.

Flood Damage Prevention Benefits

No measurable flood damage occurred in these watersheds with the exception of localized damage in the vicinity of the two unimproved secondary channels draining into Dayton Creek. This damage consisted principally of flooding of agricultural lands and temporary closing of access roads by flooding.

In the winters of 1938, 1941 and 1943, floods occurred over much of this area with depths of water ranging from 2 feet over the floors of the Canoga Park High School to depths of 6 inches over most of the southern portion of Canoga Park itself. During the 1943 storm, damage to streets, buildings, agricultural land and personal property was estimated to be \$50,000 to \$60,000. Estimates at this time of possible damage because of greater development in this area show that probable damages from the storms of January 15 and 17 would have been approximately \$200,000 if the flood channels had not been installed. Actual damages for the January 52 storm are tabulated in Table 1.

ALISO-WILBUR WATERSHEDS

General

The Aliso-Wilbur Creek Watersheds cover the north central part of San Fernando Valley, including the towns of Northridge and Reseda.

SUBWATERSHED WATERWAYS

BELL-DAYTON, CALABASAS WATERWAYS

General

These watersheds cover the entire west end of the San Fernando Valley and include the communities of Calabasas and Canoga Park. (see map) Channel improvements installed under the flood control program have been completed on Bell Creek, South Fork Bell Creek, Dayton Creek, Chatsworth Creek, and the lower 5 miles of Calabasas Creek. The secondary channels draining into Dayton Creek have not been constructed to date. One of these channels, the North Branch Bell Creek, is scheduled for construction next spring. Completed sections of Bell Creek Channel are shown in photographs (1) and (2).

Channel Operation

All completed channels in this area functioned perfectly and flowed from 60% to over capacity. No significant damage occurred to the channel installations themselves, except for minor scour in the main Bell Creek system and Calabasas Creek.

Flood Damage Prevention Benefits

No measurable flood damage occurred in these watersheds with the exception of localized damage in the vicinity of the two unimproved secondary channels draining into Dayton Creek. This damage consisted principally of flooding of agricultural lands and temporary closing of access roads by flooding.

In the winters of 1938, 1941 and 1943, floods occurred over much of this area with depths of water ranging from 2 feet over the floors of the Canoga Park High School to depths of 6 inches over most of the southern portion of Canoga Park itself. During the 1943 storm, damage to streets, buildings, agricultural land and personal property was estimated to be \$25,000 to \$30,000. Estimates at this time of possible damage because of greater development in this area show that probable damages from the storm of January 15 and 17 would have been approximately \$200,000 if the flood channels had not been installed. Actual damages for the January 25 storm are tabulated in Table 1.

ALISO-WILBUR WATERWAYS

General

The Aliso-Wilbur Creek Watershed covers the north central part of San Fernando Valley, including the towns of Northridge and Reseda.

The minor and community flood control channels were completed in the Wilbur Creek subwatershed together with conservation management of farm lands on all critical agricultural areas. The Aliso Creek flood channel has been improved between Devonshire Street and Wilbur Avenue Debris Basin. Photographs (3), (4) and (13) show the stream following the January 15-18 flood in the valley floor some three miles to the north of the Los Angeles River. The flood waters below this point were carried in a depressed street section thru the town of Reseda and adjacent agricultural lands to the Los Angeles River.

Channel Operation

The 2 miles of minor channels in the Wilbur Creek Watershed functioned perfectly without damage, giving complete relief to the agricultural areas in this watershed. All channels operated at about 50% to 100% capacity. The principal Wilbur Creek Channel functioned exceedingly well, operating at about 80% capacity with minor spot damage to revetments in the upper reaches of the channel. Typical damage was the knocking down of revetment by earth slides in the steeper bank areas. Three to four foot drops developed at all stabilizers in the upper 2½ miles of this channel improvement. This will require maintenance by the Los Angeles County Flood Control District in that additional stabilizers will have to be provided or temporary aprons put on the existing stabilizers. These maintenance needs are normal for this type of control in a major storm. The Aliso Channel thru its improved reach functioned perfectly without damage and operated at full capacity, particularly in the lower reaches.

Flood Damage Prevention Benefits

It is difficult to evaluate damage prevention benefits in the parts of these subwatersheds protected by works of improvement. Improvement of east and west forks of Wilbur Creek and community channels prevented crop loss, land scour and deposition on agricultural lands and streets on the upper valley slopes. Stabilization and improvement of Wilbur and Aliso Creek Channel reaches prevented local land loss and sediment production. These benefits are unevaluated.

Flood Damage

Negligible flood damage occurred in improved stream reaches or tributary land protected by the flood control and conservation program. However, considerable damage occurred in unimproved reaches of Aliso Creek above Devonshire Street upper mountain watershed area, and in the area below Wilbur Debris Basin. These damages are tabulated in Table 1.

The natural Aliso Channel for two miles above the improvement suffered considerable damage and some loss to agricultural land from undercutting of banks and bottom scour. The upper watershed areas containing an extensive oil well development suffered considerable damage in mud flows, blocking roads and well sites together with scour in critical mountain channel areas. Time has not permitted making an estimate of the extent of these damages.

The minor and community flood control channels were completed in the Wilbur Creek watershed together with conservation management of farm lands on all critical agricultural areas. The Aliso Creek Flood Channel has been approved between Devonshire Street and Wilbur Avenue. Photographs (3), (4) and (13) show the stream following the January 15-18 flood in the valley floor some three miles to the north of the Los Angeles River. The flood waters below this point were carried in a depressed street section thru the town of Reseda and adjacent agricultural lands to the Los Angeles River.

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Flood Damage

Negligible flood damage occurred in improved stream reaches or tributary land protected by the flood control and conservation program. However, considerable damage occurred in unimproved reaches of Aliso Creek above Devonshire Street upper mountain watershed area, and in the area below Wilbur Avenue Basin. These damages are tabulated in Table I.

The natural Aliso Channel for two miles above the improvement suffered considerable damage and some loss to agricultural land from undermining of banks and bottom scour. The upper watershed area containing an extensive old well development suffered considerable damage in mud flows, blocking roads and well sites together with scour in critical mountain channel areas. This has not permitted making an estimate of the extent of these damages.

In the common flood plain of this and other streams, the damage was extensive. The artificial debris basin taking the combined flow of Aliso and Wilbur Creek was practically filled with debris during the storm of January 15. During the storm of January 17, additional debris from the mountain watersheds passed thru this channel and debris basin to become an important contributor to the flood plain damage. Flood plain damage common to Bull, Aliso, Wilbur, Limekiln, and Browns-Santa Susana subwatersheds are discussed in a later section.

WILSON-EAST WATERSHED

General

The Wilson-East Watershed covering the northwest corner of the San Fernando Valley includes the lands lying north and west of San Fernando. The proposed channel improvements through this watershed contemplated the improvement of East Canyon Channel from its Canyon mouth near Foothill Boulevard to its junction with Wilson Channel near San Fernando Road. A second reach in the middle portion of the watershed was the proposed improvement of the channel to carry the combined flows of Wilson and East Canyons from San Fernando Road to Rinaldi Street immediately east of the San Fernando Mission and a third portion of the channel improvement in the lower watershed was the diversion of these waters from their present channel on the valley floor along Sepulveda Boulevard to a new location southwesterly to Pacoima Wash.

Supplemental minor channels in the upper third of the watershed, namely, Bledsoe and Tyler drains were proposed to be constructed from Foothill Boulevard northwesterly to the East Canyon Channel.

Of these scheduled works, only the first element in the lower third of the watershed has been completed to date, namely, the diversion of the flood waters from Rinaldi Street east of the San Fernando Mission to the Pacoima Wash. Two sections of this channel are shown in Photographs (5) and (6) following this storm.

Channel Operation

The improved channel consisting of one and one-quarter miles of concrete lined ditch and culverts carried approximately 700 cubic feet per second at peak discharge during the storms of January 15 and 17, 1952. This channel performed its function admirably in that mean capacity flood flows were diverted to the Channel thru catchment basins at road crossings, to flow out thru agricultural lands and thence to the Wilson-East Channel over the sides of the lining at four points. Drains provided at these principal points for field drainage were plugged with debris and failed to function. The initial periods of flow over the sidewalls of the lining caused no damage but as flows continued and earth banks above the lining were eroded away, water penetrated behind the linings and lifted three sections of lining out of position, varying in length from 10 to 70 ft. These three sections of lining

In the common flood plain of this and other streams, the damage was extensive. The artificial debris basin taking the combined flow of Aliso and Wilson Creek was previously filled in by debris during the storm of January 15. During the storm of January 17, additional debris from the mountain watersheds passed thru this channel and debris began to become an important contributor to the flood plain damage. Flood plain damage common to Hill, Aliso, Wilson, Llanos, and Brown-Santa Barbara watersheds are discussed in a later section.

WILSON-EAST WATERSHED

General

The Wilson-East Watershed covering the northwest corner of the San Fernando Valley includes the lands lying north and west of San Fernando. The proposed channel improvements through this watershed contemplated the improvement of East Canyon Channel from its canyon mouth near Potrero Hill Boulevard to its junction with Aliso Channel near San Fernando Road. A second reach in the middle portion of the watershed was the proposed improvement of the channel to carry the combined flows of Aliso and East Canyons from San Fernando Road to Rinaldi Street immediately east of the San Fernando Mission and a third portion of the channel improvement in the lower watershed was the diversion of these waters from their present channel on the valley floor along Sepulveda Boulevard to a new location southerly to Potrero Hill. Supplemental minor channels in the upper third of the watershed, namely, Aliso and Tyler drains were proposed to be constructed from Potrero Hill Boulevard northwesterly to the East Canyon Channel.

Of these scheduled works, only the first element in the lower third of the watershed has been completed to date, namely, the diversion of the flood waters from Rinaldi Street east of the San Fernando Mission to the Potrero Hill. Two sections of this channel are shown in photographs (2) and (3) following this section.

Channel Operation

The improved channel consisting of one and one-quarter miles of concrete lined ditch and culverts carried approximately 700 cubic feet per second at peak discharge during the storm of January 15 and 17, 1935. This channel performed its function admirably in that mean capacity flood flows were diverted to the Channel thru catchment basins at road crossings, to flow out thru agricultural lands and thence to the Aliso Channel over the slope of the lining at four points. Drainage provided at these principal points for field drainage were plugged with debris and failed to function. The initial periods of flow over the shoulders of the lining caused no damage but as flows continued and earth banks above the lining were eroded away, water penetrated behind the linings and lifted these sections of lining out of position. These three sections of lining varying in length from 10 to 70 ft.

will have to be replaced by the City of Los Angeles at an estimated cost of \$1600. Since the lining was adequately tied together with reinforcing, no portion of the lining has been destroyed completely and the ditch will probably continue to function satisfactorily for the rest of the rainfall season unless very heavy flows occur.

Flood Damage Prevention Benefits

It is obvious from observation of flood flows in 1938, 1941 and 1943 that considerable flood and sediment damage would have occurred within an area of approximately 7 square miles of the valley floor effecting homes and stores in the community of Sepulveda and blocking Sepulveda Boulevard with sediment deposition. Time has not permitted estimating the damage that would have resulted had this year's flood flows passed over this area.

Flood Damage

The channel works in the upper-two-thirds of the watershed have not been completed as yet. Typical damage is shown in pictures (11) and (12). The damage throughout this portion of the watershed was principally of four types and is tabulated in Table 1.

- a. Principal damage occurred along the course of proposed channel improvements.
- b. In general, the damage to agricultural areas was slight since most of the areas are under conservation management and have installed adequate conservation practices; however, where water concentration from roads and channels flowed over agricultural lands, the damage from scour and deposition was heavy.
- c. Damage to residences in this area was fairly spotty and flood flows were relatively shallow.
- d. Four people lost their lives in an attempt to cross the Wilson-East Channel in a 1951 Buick Sedan which was a complete loss.

BROWNS-SANTA SUSANA WATERSHEDS

General

These watersheds cover the northwest corner of San Fernando Valley and include the agricultural community, Chatsworth, and the eastern portion of Canoga Park.

It is planned ultimately to include the Browns Creek Channel from its canyon mouth north of the community of Chatsworth to the Los Angeles River. A short critical reach of this channel on the valley's floor has been improved in past years by the Los Angeles County Flood Control District. Also proposed for improvement from its canyon mouth to its junction with Browns Creek is the Santa Susana Creek. The

first element of Browns Creek consisting of approximately a mile and a quarter of flood channel from the Los Angeles River to the short reach of channel improved by the Los Angeles County Flood Control District is scheduled for construction next Spring.

Flood Damage

Flood damage throughout the length of the Browns Creek and Santa Susana Creek was severe with the principal damage areas occurring in the deposition area a mile and a half upstream from the Los Angeles River. This is covered under discussion of the common flood plain. Damage above this area consisted essentially of destruction of private revetment works along the flood channels, gullying in critical stream reaches in the valley, and scour of sediment from canyon bottoms in the hills. Table 1 shows types and amount of flood damage.

BULL-GRANADA WATERSHED

General

The Service's flood control program contemplates improvement of the Bull Creek Channel from the foothill terminus of the east and west branches to the Los Angeles River together with the improvement of Granada Channel from the vicinity of Granada Hills to its junction with Bull Creek. No works of improvement have been installed in this subwatershed under the Flood Control Program.

Flood Damage

The flood damage over this watershed was moderate to severe with principal damages occurring along the Granada Channel tributaries and the lower portions of the watershed in the valley floor. This damage was principally the result of flood flows leaving the unimproved Granada Channel and from scour in the numerous unimproved secondary channels throughout the watershed. Damage by soil loss, deposition, and inundation of improvements in this area is given in Table 1.

THE COMMON FLOOD PLAIN OF BULL, WILBUR-ALISO, LIMEKILN AND BROWNS-SANTA SUSANA CREEKS

General

The flood waters of the above named streams, at present enter a common flood plain in the lower slope, roughly between Roscoe Boulevard and the Los Angeles River. The topography is relatively level with a slight slope to the south and east. Stream channels are poorly defined, or shallow depressed streets which serve as channels.

First element of Brown Creek consisting of approximately a mile and a quarter of flood channel from the Los Angeles River to the short reach of channel improved by the Los Angeles County Flood Control District is scheduled for construction next Spring.

Flood Damage

Flood damage throughout the length of the Brown Creek and Santa Barbara Creek was severe with the principal damage areas occurring in the deposition area a mile and a half upstream from the Los Angeles River. This is covered under discussion of the common flood plain. Damage above this area consisted essentially of destruction of private property within the flood channels, gulching in critical stream reaches in the valley, and scour of sediment from canyon bottoms in the hills. Table I shows types and amount of flood damage.

BULL-CANADA WATERWAY

General

The Service's flood control program contemplates improvement of the Bull Creek Channel from the foothill terminus of the east and west branches to the Los Angeles River together with the improvement of Granada Channel from the vicinity of Granada Hills to its junction with Bull Creek. No work of improvement has been installed in this watershed under the Flood Control Program.

Flood Damage

The flood damage over this watershed was moderate to severe with principal damage occurring along the Granada Channel tributaries and the lower portion of the watershed in the valley floor. This damage was principally the result of flood flows leaving the improved Granada Channel and then scour in the numerous unimproved secondary channels throughout the watershed. Damage by soil loss, denudation, and inundation of improvements in this area is given in Table I.

THE COMMON FLOOD PLAIN OF BULL, WILBUR-LIBO, LINNETT AND KNOWN-SANTA BARBARA CREEKS

General

The flood waters of the above named streams, at present enter a common flood plain in the lower slope, roughly between Roscoe Hills and the Los Angeles River. The topography is relatively level with a slight slope to the south and east. Stream channels are poorly defined, or shallow depressed streets which serve as channels.

Culverts and bridges are often of inadequate cross section, and are subject to plugging by debris. The lower part of the valley has experienced rapid residential and industrial development in the vicinity of the existing communities of Reseda, Northridge, Canoga Park during the past ten years. Many of the houses are of cement slab floor construction which increases vulnerability to flood damage.

Flood Damage

During the night of January 15, the debris basin on the Lower Wilbur-Aliso Creeks Channel, situated just north of Roscoe Boulevard, was nearly filled with sediment and debris. The flood of January 17 carried its load of debris through the basin and spread out across farm lands, down streets and over residential property. A heavy load of sediment was deposited in the streets of Reseda.

Browns Creek, Santa Susana and Limekiln Creeks all entered the common flood plain at its northern edge. Their flows were initially carried by poorly defined channels or depressed streets until deposition of sediment, implemented by bridge approaches becoming plugged or cars and busses becoming stalled at street crossings, caused the streets to overflow and become diverted down other streets or across farm and residential property. Deposition was heavy in nearly all streets. Approximately 150 houses were flooded, lawns, driveways and farm property had sediment and debris deposited on them. It was necessary to evacuate about 80 families in Reseda and provide a refuge for them during each night of flood. Traffic was completely disrupted in the overflow area. Schools were closed. Pictures Nos. 8, 14 and 15. One life was lost when the driver and his motor vehicle was swept down Browns Creek into the Los Angeles River.

A considerable portion of the flow of the above streams passed through Reseda. These flows were intermingled with the flow of Winnetka and Wilbur-Aliso Creeks. Damage to Reseda and lower lying property was considerable and consisted of flooding and deposition. Picture No. 7.

In addition to the direct flood water and sediment damages, there were major indirect damages. Schools were closed for three days, traffic was completely disrupted during the nights of the flood and the following days. Business losses were considerable due to isolation or debris deposition in front of the property. A large number of cesspools overflowed and required pumping out. This created a health hazard. A large number of residents were prevented from getting to work, thus losing one or more days of wages. In an effort to measure the indirect damages in monetary terms, fifty percent of the direct road and street damages were taken as representing indirect damages. Fifteen percent of the other types of damage were taken as representative of indirect damages.

Highways and bridges are often of inadequate cross section, and are subject to plunging by debris. The lower part of the valley has experienced rapid residential and industrial development in the vicinity of the existing communities of Nevada, Fortitude, Orange Park during the past few years. Many of the houses are of cement slab floor construction which increases vulnerability to flood damage.

Flood Damage

During the night of January 12, the debris basin on the lower Withur-Alice Creek Channel, situated just north of Nevada Fortitude, was nearly filled with sediment and debris. The flood of January 12 carried the load of debris through the basin and spread out across farm lands, down streets and over residential property. A heavy load of sediment was deposited in the streets of Nevada.

Brown Creek, Santa Barbara and Littleton Creeks all entered the common flood plain at its northern edge. Their flows were initially carried by poorly defined channels or depressed streets until deposition of sediment, impeded by bridges and culverts becoming plugged or care and houses becoming isolated at street crossings, caused the streets to overflow and houses diverted down other streets or across farm and residential property. Deposition was heavy in nearly all streets. Approximately 150 houses were flooded, many driveways and farm property had sediment and debris deposited on them. It was necessary to evacuate about 80 families in Nevada and provide a refuge for them during each night of flood. Traffic was completely disrupted in the overflow area. Schools were closed. Pictures Nos. 8, 14 and 15. One life was lost when the driver and his motor vehicle was swept down Brown Creek into the Los Angeles River.

A considerable portion of the flow of the above streams passed through Nevada. These flows were intermingled with the flow of Withur-Alice and Littleton Creeks. Damage to Nevada and lower lying property was considerable and consisted of flooding and deposition. Picture No. 7.

In addition to the direct flood water and sediment damage, there were major indirect damage. Schools were closed for three days, traffic was completely disrupted during the night of the flood and the following days. Business losses were considerable due to isolation or debris deposition in front of the property. A large number of garages overflowed and required pumping out. This created a health hazard. A large number of residents were prevented from getting to work, thus losing two or more days of wages. In an effort to minimize the indirect damage in Nevada, fifty persons of the direct road and street damage were taken as representative taken as representative of indirect damage.

Bull Creek, while flowing across the common flood plain, had little overflow and did not join the common flood waters of the other streams. Damages were relatively minor along Bull Creek and consisted almost wholly of sedimentation at street intersections or along cross streets.

Preliminary damage appraisals made by the Soil Conservation Service immediately following the flood indicated that damages in the common flood plain amounted to an estimated \$475,500. See Table 2.

Total floodwater and sediment damages totaled \$731,750. The damages are summarized in Table 3.

SUMMARY

The storms of January 15 and 17 caused serious flooding in the Los Angeles River Watershed. These storms were of comparable intensity to those which occurred in the watershed in January 1943 and March 1938.

The Soil Conservation Service made a flood damage evaluation of the upper portion of the Los Angeles River Watershed which is included in the boundaries of the San Fernando Soil Conservation District. Damages were estimated for the areas not protected by flood control installations, and an evaluation was made of the benefits from flood protection for the areas protected by flood control installations made cooperatively by the Soil Conservation Service, the Los Angeles Flood Control District, the City of Los Angeles and the San Fernando Valley Soil Conservation District.

It was estimated that flood water and sediment damages amounted to \$731,750 in the areas not protected by flood control installations. These damages included damages to dwellings, business establishments, streets, roads, bridges, personal property and crops.

Losses such as stream bank erosion, minor field deposition, etc. were not evaluated as they were widely scattered and were minor in total value. In addition to the evaluated losses, five lives were lost in this area and a serious health hazard was created by overflow of cess-pools.

The conservation program on the land and works of improvement installed under the flood control authorization performed exceedingly well under severe conditions. It was estimated that flood control works on Bell, Dayton, Chateworth and Alabamas Creeks prevented damages in the amount of \$200,000 to Canoga Park, local streets and roads and to agricultural land.

But Creek, while flowing across the common flood plain, had little overflow and did not join the common flood waters of the other streams. Damages were relatively minor along But Creek and consisted almost wholly of sedimentation at street intersections or along cross streets.

Preliminary damage appraisals made by the Soil Conservation Service immediately following the flood indicated that damages in the common flood plain amounted to an estimated \$475,200. See Table A.

Total floodwater and sediment damages totaled \$731,750. The damages are summarized in Table B.

SUMMARY

The storms of January 15 and 17 caused serious flooding in the Los Angeles River Watershed. These storms were of comparable intensity to those which occurred in the watershed in January 1943 and March 1938.

The Soil Conservation Service made a flood damage evaluation of the upper portion of the Los Angeles River Watershed which is included in the boundaries of the San Fernando Soil Conservation District. Damages were estimated for the areas not protected by flood control installations, and an evaluation was made of the benefits from flood protection for the areas protected by flood control installations. The Los Angeles made cooperatively by the Soil Conservation Service, the Los Angeles Flood Control District, the City of Los Angeles and the San Fernando Valley Soil Conservation District.

It was estimated that flood water and sediment damages amounted to \$731,750 in the areas not protected by flood control installations. These damages included damages to dwellings, business establishments, streets, roads, bridges, personal property and crops.

Losses such as stream bank erosion, minor field deposition, etc. were not evaluated as they were widely scattered and were minor in total value. In addition to the evaluated losses, five lives were lost in this area and a serious health hazard was created by overflow of cesspools.

The conservation program on the land and works of improvement installed under the flood control authorization performed exceedingly well under severe conditions. It was estimated that flood control works on But Creek, Westworth and Alhambra Creeks prevented damages in the amount of \$200,000 to \$300,000 to homes, local streets and roads and to agricultural land.

Similar flood control works and practices in Wilson-East Creeks and Wilbur-Alice Creek subwatersheds prevented an estimated \$100,000 damages primarily to the community of Sepulveda and the streets, roads, crops and agricultural lands.

TABLE 1
SUMMARY OF ESTIMATED FLOOD WATER AND SEDIMENT DAMAGES BY SUBWATERSHEDS
ABOVE COMMON FLOOD PLAIN

Drainage	STREETS			CHANNELS					MISCELLANEOUS					
	Soil Loss Cu.Yds.	Deposition Cu.Yds.	Paving; Sq.Ft.	Soil Loss		Revetments			Stabil. No.	Gravite Sq.Ft.	Bldg. No.	Personal Property Dollars	Debris Cleanup Dollars	Debris Basin Cleanout Cu.Yd.
				Slope	Bank	Destroyed	Damaged	Additional						
				Cu.Yd.	Cu.Yd.	Lin.Ft.	Lin.Ft.	Lin.Ft.						
Wilson-East	11353	9479	100	0	3756	0	0	0	0	0	6	\$500	500	2500
Bull Creek 1/ 2/	5606	5221	900								4	500	100	
Aliso Wilbur 1/	1375	3130	45100	15412/	25872/	132	422	7440	66	0	7		150	48800
Lincoln 1/	3175	1540	0	0	7900	0	0	0	0	4700		2500	300	
Brown Creek 1/	500	775	500	3755	200	146	370	0	0	0		1000	500	
Santa Susana 1/	200	725	0	0	3600	0	0	0	0	0	2	1000	200	
Bell Calabazas 2/	100	615	0										-	
Woodland Hills 2/	0	575	0										50	
Kelvin 2/	500	100	300										50	
TOTAL	23141	22160	46900	5296	18043	278	792	7440	66	4700	21			51200
UNIT COST	\$ 1.50	\$1.50	\$.25	\$1.50	\$1.50	\$3.50	\$.85	\$.50	\$250	\$.50				\$1.25
TOTAL DIRECT DAMAGE	\$34700	\$33250	\$11725	\$7950	\$27050	\$1000	\$700	\$3700	\$16500	\$2350	\$5250	\$13500	\$1850	\$64000
INDIRECT "	17350	16600	5850	1200	4050	150	100	550	2500	350	1300	2000	300	3200
TOTAL ESTIMATED DAMAGE	52050	49950	17575	9150	31100	1150	800	4250	19000	2700	6550	17500	2150	67200

- 1/ Damages on common flood plain shown on separate table
2/ Channel damage not estimated
3/ Soil loss on S.C.S. constructed channels
4/ Additional wire revetment below channel grade

TABLE 2

Summary of Estimated Floodwater and
Sediment Damages in Common Flood Plain

Item of Damage	<u>ESTIMATED DAMAGE</u>	
	Direct	Indirect
Residences, Buildings and Stores	\$ 62,000	\$ 15,500
Sediment Removal from Streets and Roads	179,200	89,600
Damages to Streets and Bridges	18,500	9,250
Debris Cleanup from Lots and Driveways	20,400	3,100
Personal Property Loss ^{1/}	40,000	6,000
Crop Loss from Sedimentation and Scour	4,800	700
Releveling of Crop Land	3,000	450
Weed Infestation on Inundated Land	<u>20,000</u>	<u>3,000</u>
TOTAL	\$347,900	\$127,600
TOTAL ALL LOSSES	\$475,500	

^{1/} Includes damages to automobiles, farm machinery, pumps, and motors

TABLE 3

Summary of Floodwater and Sediment Damages

Item of Damage	<u>ESTIMATED DAMAGE</u>	
	Direct	Indirect
P Residences, Buildings and Stores	\$ 67,250	\$ 16,800
S Sediment Removal from Streets	224,500	123,550
Damages to Bridges and Streets	30,200	15,100
Damages to Flood Control Channels	59,250	8,900
P Debris Cleanup	22,250	3,300
P Personal Property Loss	53,500	8,000
S Crop Loss from Sedimentation and Scour	4,800	700
S Releveling of Crop Land	3,000	450
Weed Infestation	20,000	3,000
Sediment Removal from Debris Basins	<u>64,000</u>	<u>3,200</u>
TOTAL	\$548,750	\$183,000
TOTAL ALL LOSSES	\$731,750	

67-22-8

(1) View of Soil Creek at George Lake situated at the west end of San Fernando Valley. The high water mark for the storm of January 17, 1932, can be seen on both banks of the channel. This system of channels held flood damage to nothing for the first time in the history of this portion of the Valley. Channel was a cooperative flood control program involving 6 miles of flood channel constructed under contract by the Soil Conservation Service in cooperation with the Los Angeles County Flood Control District.



07-22-8

(1) View of Ball Creek at George Park district at
the west end of San Fernando Valley. The high water
marks for the storm of January 17, 1922, can be seen
on both banks of the channel. This system of channels
held flood damage to nothing for the first time in
the history of this portion of the Valley. Channel
was a cooperative flood control program involving
miles of flood channel constructed under contract by
the Soil Conservation Service in cooperation with the
Los Angeles County Flood Control District.



(2) Bell Creek Flood Channel near the Canoga Park High School. 500 yards downstream this channel combines with the improved Calabasas Flood Channel to form the Los Angeles River. During the storm years of 1938, 1941 and 1943, 1 to 2 feet of water covered the floors of the school building in the right of this picture, as well as most of the homes in the town of Canoga Park in the background and left of the picture. On each of the above mentioned years, 80 people were ferried by boat to high grounds out of the lower areas in Canoga Park along this channel. The high water line of the storm of January 17, 1952 can be seen along the right bank in the picture. During the storm peak water flowed 6 inches deep into the street over the left side of the channel. There was no damage to homes or business.

W-65-12

(2) Bell Creek flood channel near the Omega Park High School. 500 yards downstream this channel connects with the improved Calaveras flood channel to form the Los Angeles River. During the winter years of 1937, 1941 and 1945, 1 to 2 feet of water covered the floors of the school building in the right of this picture, as well as most of the homes in the town of Omega Park in the background and left of the picture. In each of the above mentioned years, 30 people were hurried by boat to high grounds out of the lower areas in Omega Park along this channel. The high water line of the storm of January 17, 1937 can be seen along the right bank in the picture. During the storm peak water flowed 8 inches deep into the street over the left side of the channel. There was no damage to homes or business.



(3) View of the Wilbur Creek Flood Channel in the orchard lands north of Northridge in the San Fernando Valley. Peak flows were within 12 inches of the top of the revetment during the January 17, 1962 flood.



(4) View of the confluence of Wilbur and Aliso Creeks near Northridge in the San Fernando Valley. The depth of flow in these channels was within 6 inches of the top of the revetment during the January 17, 1962 flood. The $3\frac{1}{2}$ miles of flood channel shown in this and the above photo functioned perfectly to relieve flood damage to agricultural lands through the improved portions of the watershed. This was a cooperative project constructed by the Soil Conservation Service under contract in cooperation with the Los Angeles County Flood Control District.

C-225-8

(5) View of the Wilbur Creek Flood Channel in the orchard lands north of Fortbridge in the San Fernando Valley. Peak flood was within 12 inches of the top of the revetment during the January IV, 1933 flood.

C-225-8

C-225-8

(6) View of the confluence of Wilbur and Wilcox creeks near Fortbridge in the San Fernando Valley. The depth of flow in these channels was within 8 inches of the top of the revetment during the January IV, 1933 flood. The 8 1/2 miles of flood channel shown in this and the above photo threatened seriously to relieve flood damage to agricultural lands through the improved portions of the watershed. This was a cooperative project conducted by the Soil Conservation Service under contract in cooperation with the Los Angeles County Flood Control District.



(5) View of the Wilson-East flood channel near the west edge of San Fernando, California

C-1152-4

(5) View of the Wilson-Bent flood channel near the
west edge of San Fernando, California

C-1128-12

NOV 11 1962

12



(6) View of the Wilson-East flood channel through citrus groves near San Fernando, California. This channel flowed at $2/3$ capacity during the flood flow of January 17, 1962, diverting all waters from the upper watershed lands away from the agricultural lands, the community of Sepulveda and Sepulveda Blvd., one of the principal access highways from Bakersfield to Los Angeles. This was a cooperative project constructed by the Soil Conservation Service under contract in cooperation with the City of Los Angeles and the Los Angeles County Flood Control District.

C-1128-12

(6) View of the Wilson-Frost flood channel through
olive grove near San Fernando, California. This
channel flowed as S.E. gully during the flood flow
of January 17, 1932, diverting all waters from the
upper watershed lands away from the agricultural
lands, the community of Sepulveda and Sepulveda Div.
one of the principal sources of water from Santa Monica
to Los Angeles. This was a cooperative project con-
ducted by the Soil Conservation Service under con-
tract in cooperation with the City of Los Angeles and
the Los Angeles County Flood Control District.



(7) View of the main street, Sherman Way, through the town of Reseda after the January 17, 1952 flood. Eighty people were evacuated from homes in this community during the height of the floods on January 15 and 17, 1952. Damage to stores and residences in this area is estimated at \$75,000.



(V) View of the main street, Shuman Way, through
the town of Paradise after the January 17, 1933 flood.
Many people were evacuated from homes in this com-
munity during the height of the floods on January 18
and 19, 1933. Damage to stores and residences in
this area is estimated at \$75,000.



(8) View of deposition on Sherman Way west of Reseda, California caused by Browns Creek flowing toward the Los Angeles River in Mason Street. A Pacific Electric bus and four sedans, buried in the mud the night of January 17, 1952, can be seen in the background. Debris deposits from 5 feet deep to 1 foot deep occur along Sherman Way and adjacent agricultural lands for a distance of half a mile west and a mile to the east.

550

8-30-78

(3) View of deposition on Sherman Way east of
Inverton, California caused by highway (view looking
toward the Los Angeles River in Inverton Street. A
Pacific Electric bus and four sedans, parked in the
mid the night of January 17, 1938, can be seen in
the background. Depth deposits from 5 feet deep to
1 foot deep occur along Sherman Way and adjacent rights
of way for a distance of half a mile west and
a mile to the east.



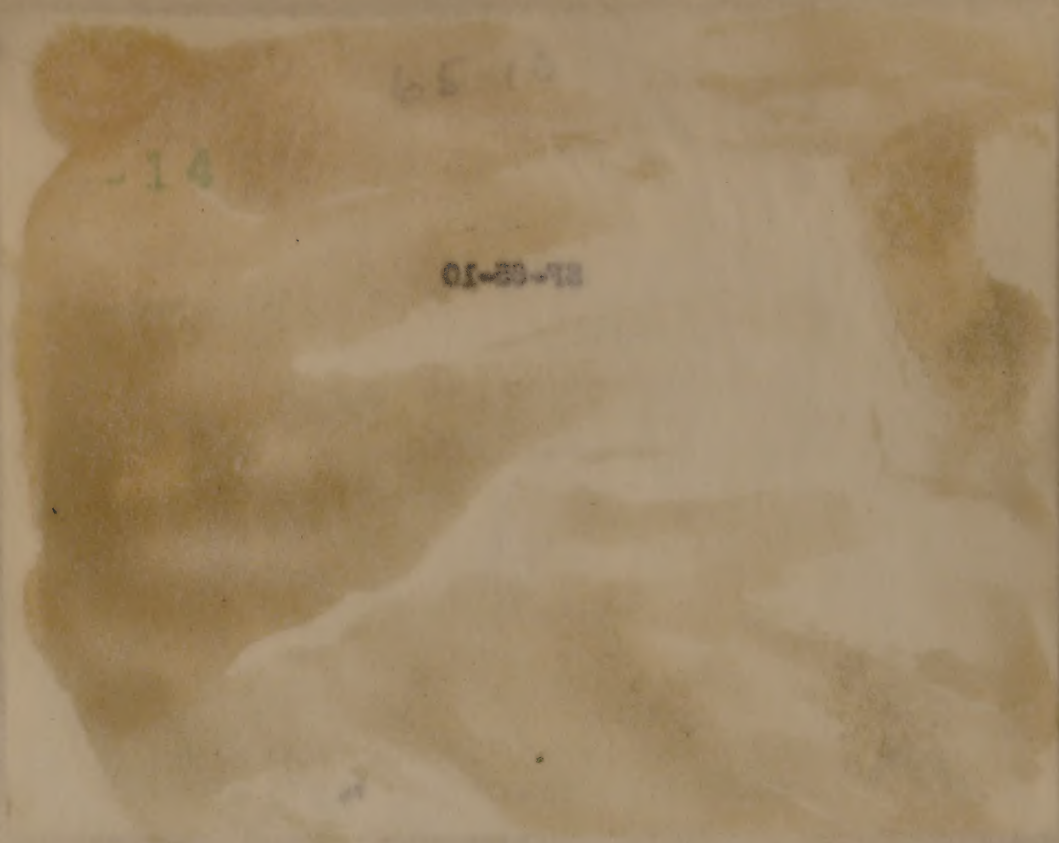
(9) View of Santa Susana Creek above its junction with Browns Creek near Chatsworth in San Fernando Valley showing gullying and destruction of inadequate revetment placed along one side of this channel by the property owner. The channel through this reach is 5 feet deeper and 100% wider as a result of the flood of January 17, 1952. The height of the flood flow is indicated by the man.



(2) View of Santa Susana Creek above its junction
with Brown Creek near the north in San Fernando
Valley showing gulping and destruction of lands
grate pavement placed along one side of this
channel by the property owner. The channel through
this reach is a race gutter and 100' wider on a
result of the flood of January 17, 1928. The height
of the flood flow is indicated by the man.



(10) View of Limakila Creek north and west of Northridge in San Fernando Valley. Loss of soil and deposition of brush and debris against ranch homes and agricultural lands can be seen in the left background of this picture.



(10) View of Lincoln Creek north end west of
Hortland in San Francisco Valley. Line of soil
and deposition of debris and debris against ranch
house and agricultural lands can be seen in the
left background of this photo.



(11) View of the debris clogged May Canyon Wash as it flowed toward the homes northeast of San Fernando, California. The remaining channel depths are 6 to 10 inches after the flood flows of January 17, 1952. Should the channel breach its banks at this point, extensive damage would occur to homes and orchard areas on the slopes in this view.



1-25-1

(11) View of the debris along the canyon wall
as it flows toward the point northeast of San
Bernardo, California. The remaining channel
depths are 6 to 18 inches after the flood flows
of January 17, 1952. Within the channel breach
ice banks at this point, extensive damage would
occur to homes and orchard areas on the slopes
in this view.



(12) View of street damage typical of Bledsoe, Tyler and Astoria Streets in the Sylmar area in San Fernando Valley. Debris from these areas is spread over the streets and lawns of the City of Van Nuys. Damage is the result of flood flows during the storms of January 15 and 17, 1952.



2-48-78

(12) View of river damage typical of Blackfoot
 River and nearby streams in the Teton area in
 San Fernando Valley. Damage from these areas is
 spread over the stream and lower of the city of
 San Diego. Damage is the result of flood flows
 during the storm of January 18 and 19, 1982.

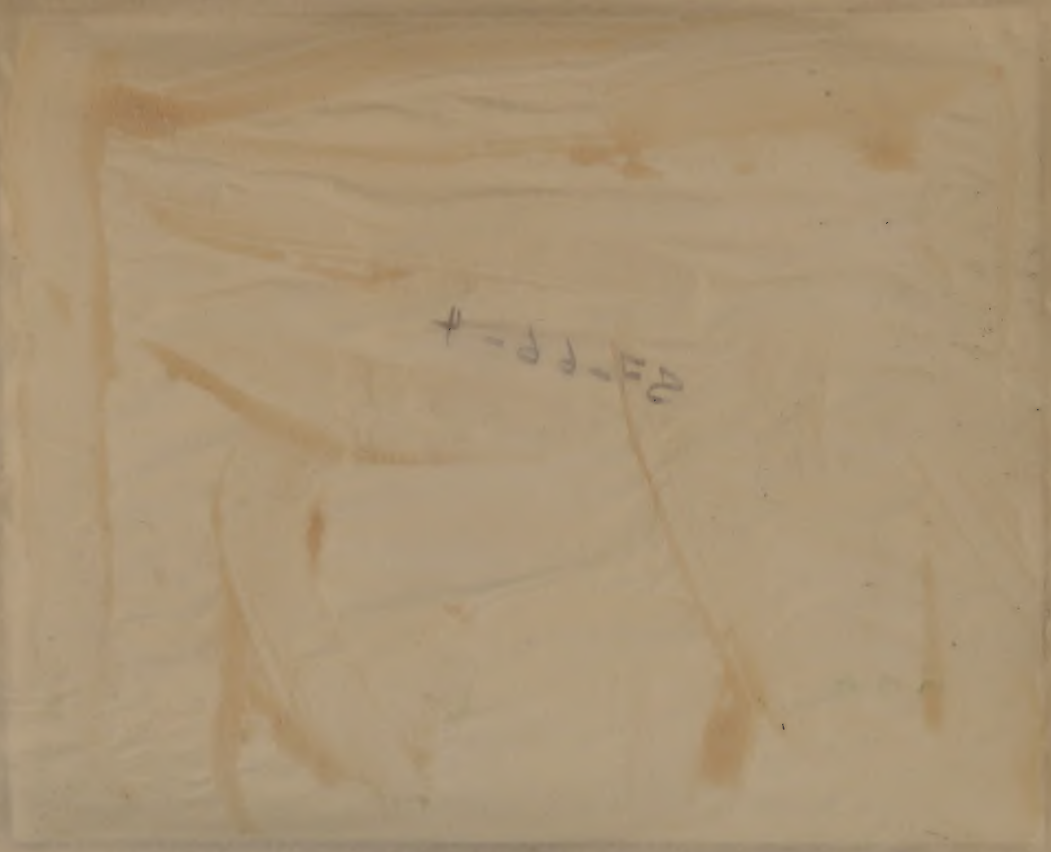


(13) Looking east on the improved Aliso Creek Channel from Reseda Blvd. bridge. The floods on January 15 and 17, 1952, have moved safely through the channel and the pipe-wire revetments and bottom stabilizers functioned satisfactorily.



(14) Removing the flood debris from Sherman Way near Mason Street. A bulldozer has pushed the sediment from the street into parkway in the center. The steam shovel is loading it into trucks to haul it away. Picture was taken 6 days after the last flood occurred.

It would cost about \$1,000 to replace the bridge. The location is about 1/2 mile north of the old bridge.



(14) Removing the flood debris from Sherman way
near Mason Street. A bulldozer has pushed the
sediment from the street into parkway in the
center. The stream channel is leading it into
center. Picture was taken 6 days after
the last flood occurred.



(15) Removal of flood debris and repairing flood damage on the northeast corner of Leadwell and Winnetka Streets. The curbs were in and the subgrade was all ready for the asphalt surface when the flood occurred. The contractor reported it would cost from \$5,000 to \$7,000 to repair the damage. The location is above the area which received most of the silt from Browns Creek.



(16). Clean cultivated
orchard. Loose soil
moved easily. Burns or
cross checks give way.
Contrast with good
cover or non-cultiva-
tion management. (17)(18)

(17) Dense cover crop
in orchard very effec-
tive in preventing soil
loss and cutting by
excess water.



57-65-1

(16) Clean cultivated
orchard. loose soil
moved easily. Burns or
crop checks give way.
Contact with good
cover or non-cultiva-
tion management. (17)(18)

(17) Dense cover crop
in orchard very effec-
tive in preventing soil
loss and cutting by
excess water.

27.65.8



(18) Oil control for
weeds. No cultivation.
Litter on surface.
Shallow, broad irriga-
tion furrows. Soil
firm. Cross checks
effective.



(19) Contour cultivation and good ground cover
prevented soil loss on this hill.

(18) All control for
wood. No cultivation.
Litter on surface.
Shallow, broad ridge-
like furrows. Soil
firm. Grass checks
effective.

P-52-F2

(19) Control cultivation and good ground cover
prevented soil loss on this hill.



(20) Tomato vines on 1 to 2% slopes check soil loss.
Note deposits in furrows.



(21) Erosion contrast under good cover and clean
cultivated conditions.

1-82-72

(20) Tomato vines on 1 to 24 slopes check soil loss.
Note deposits in furrows.

(21) Garden covered under good cover and clean
uninvaded conditions.



SAN FERNANDO VALLEY
SOIL CONSERVATION DISTRICT
BOUNDARY

② Location of report photographs

SAN FERNANDO VALLEY FLOOD CONTROL CHANNELS
Photograph locations

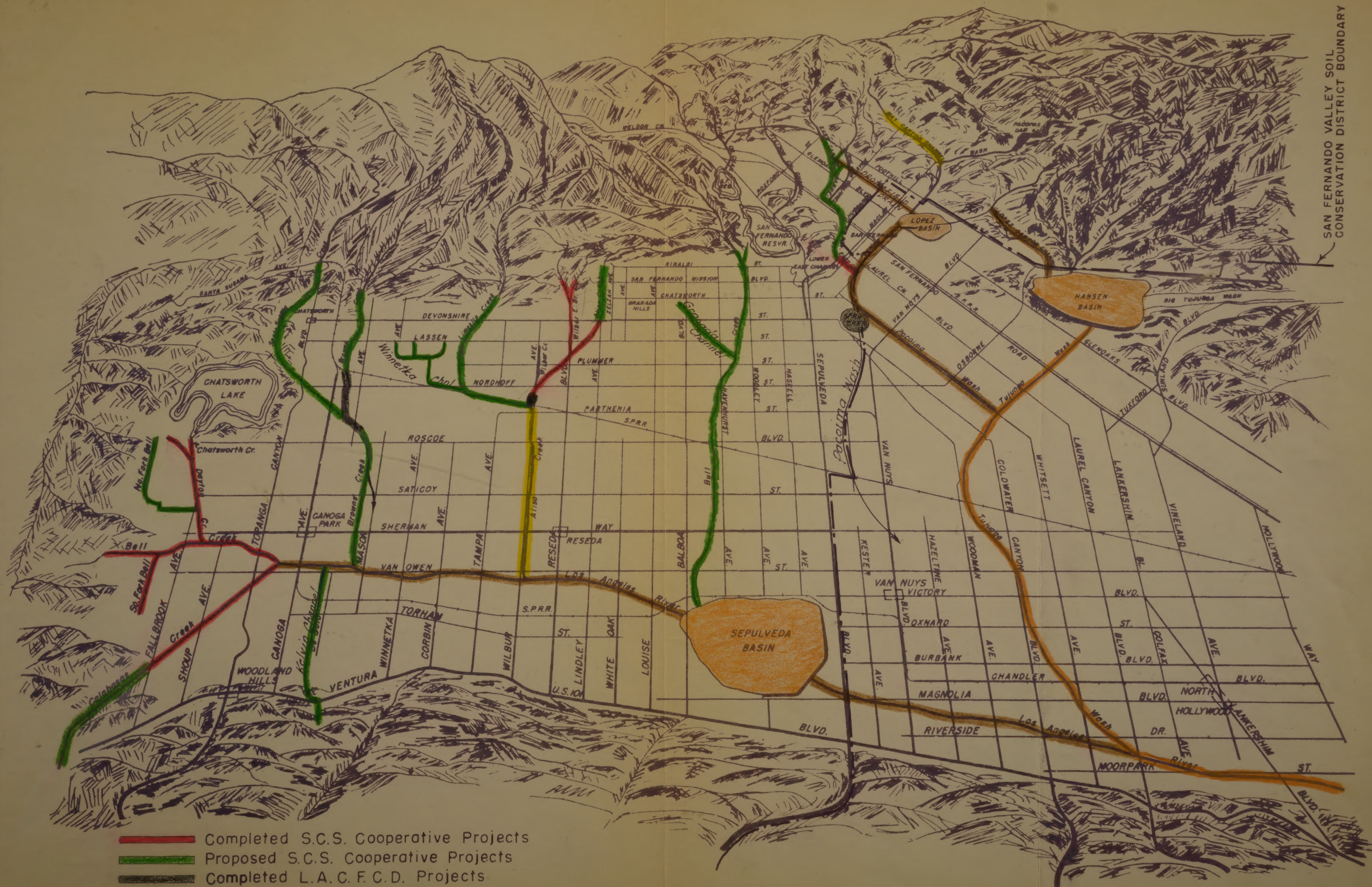


SAN FERNANDO VALLEY SOIL
CONSERVATION DISTRICT BOUNDARY

SUB-WATERSHEDS

Common Flood Plain

SAN FERNANDO VALLEY FLOOD CONTROL CHANNELS



SAN FERNANDO VALLEY FLOOD CONTROL CHANNELS

